

BRIAN A. PERRY

PATENT

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3 plate, said adapter rendering said vacuum manifold usable for producing vacuum-induced
4 flow through one or a plurality of individual chromatography columns each terminating
5 in a male portion of a male-female-type air-tight manually engageable connector, said
6 adapter comprising:
7 a plate whose lateral dimensions are substantially the same as those of said
8 multi-well laboratory plate, said plate having a plurality of through-passages, each
9 through-passage having embedded therein a female portion of said male-female-
10 type air-tight manually operable connector; and
11 a plurality of individually removable plugs, each said plug shaped to mate
12 with one of said female portions embedded in said plate to form a substantially
13 airtight closure of said through-passage.

REMARKS

Specification and Claim Objections

The corrections requested by the examiner to the specification and claims under these sections of the Office Action are made by the above amendment.

Claim Rejections -- 35 USC § 112

Applicants' responses to the various grounds given for the rejections under this section are set forth below.

Claim 1: "interchangeably accommodating". The quoted phrase states that the vacuum manifold can accommodate either a multi-well plate or one or more individual chromatography columns, and Applicant submits that this meaning is clear from the wording used. For clarification, however, Applicant has modified the wording to state more explicitly that each chromatography column terminates in the male portion of a male-female connector.

Claims 1 and 3: "engageable". This word has been changed to "operable" at the examiner's suggestion. It is noted however that the suffix "-able" for general usage is defined in the dictionary cited by the Examiner, and that the term

“engageable” is fully consistent with the dictionary definition, in addition to being widely used in patent claims.

Claims 1 and 3: “in male portions of male-female-type airtight manually engageable connectors”. Applicant has modified the wording to state more explicitly that each chromatography column terminates in the male portion of a male-female connector.

Claims 1 and 3: “through-passage”. The “through-passage” recited in these claims refers to only a single element, which is the passages in the plate as recited on the first line of the first sub-paragraph of claim 1 and the first sub-paragraph of claim 3. While the female portion of the connector will have a through-passage as well, that through-passage is not recited in these claims. The through-passage that is referred to in the second sub-paragraph is the same through-passage recited in the first sub-paragraph, i.e., the through-passage in the plate. Both the through-passage in the plate and the through-passage in the female portion of the connector will be closed by the plug at the same time; nevertheless, the claim refers only to the through-passage in the plate.

Claim 3: deletion of “manifold”. This deletion is not appropriate. The word “manifold” has been retained at the location indicated by the examiner since the word “manifold” clarifies the antecedent basis for the word “which”, i.e., that it is the manifold and not the adapter that is designed to produce vacuum-induced flow.

Claim 3: “all wells”. This phrase has been retained since the manifold is indeed designed to produce vacuum-induced flow through all wells of a multi-well plate, not just a plurality of the wells. Also, the suggested insertion of the article “a” is not appropriate, since each individual well has its own individual flow induced by the vacuum.

Claim 3: insertion of “the”. This insertion is not appropriate. The initial use of the phrase “vacuum-induced flow” refers to the manifold by itself without the adapter, and the phrase refers to flow to the wells of a multi-well plate, while the second use of the phrase refers to the manifold with the adapter and hence to flow passing

through columns that are mounted to the adapter, and the number of columns is not necessarily the same as the number of wells in the multi-well plate.

Claim 3: "lateral dimensions". The term "lateral dimension" is used in the sense in which it is commonly understood among those skilled in the art, i.e., to mean the length and width of the plate as a whole (note that "lateral dimensions" follows the words "a plate whose" and therefore modifies the plate itself, not the thickness of the walls of the plate.

Claim 3: manifold producing vacuum-induced flow through the wells of the plate with female portions embedded in the wells. The connectors recited in these claims are exemplified by LUER-LOK type connectors, which are common flow-through connectors. These are explained in detail in the specification and will leave no question in the mind of anyone skilled in the art as to the meaning and scope of the terms used in this claim.

Claim 2: "open top". Claim 2 has been incorporated into claim 1, and two recitations of "open top" have been removed. The wording has been further clarified to state that the shoulder is an internal shoulder sized to receive the plate.

For these reasons and in view of the changes introduced by the above amendment, reconsideration of the rejections under this section is respectfully requested.

Claim Rejections – 35 USC §§ 102 and 103

Applicant respectfully submits that the disclosure of Limb does not anticipate the invention as claimed in this patent application. First, a key element of the claims is the male-female-type airtight connector. The closest component in the Limb disclosure is the lower end of the filter unit (i.e., the tubular stem 68) and the shank 86 of the stopper (FIGS. 7 and 8) and the tubular boss 53 into which the tubular stem and the shank are separately inserted. These parts are not "connectors" as the term is commonly understood. The tubular stem does not join the boss, nor does the shank join the boss -- they merely rest inside the boss. They are merely in contact and can be readily moved up and down by simple lifting; there is no mechanical connection between them. Nor do the

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O-rings hold these parts together; all the O-rings do is prevent leakage of fluid around the stem or shank. These parts do not meet the recitation of "connector" in Applicant's claims, nor do they suggest a connector.

The shoulder recitations added to claim 1 by the above amendment further distinguish that claim from the Limb disclosure, since Limb discloses no internal shoulder that will receive either a multiwell plate or an adapter plate of the type claimed herein.

Accordingly, the invention as presently claimed is neither anticipated nor rendered obvious by the disclosure of Limb.

The Franciskovich et al. patent is cited for its disclosure of a chromatographic medium above a filter fixed within a through-passage. Whether or not such a disclosure appears in this reference, Franciskovich et al. fails to disclose any of the elements addressed above that are missing from the Limb disclosure. Therefore, the combined teachings of Limb and Franciskovich et al. fail to render the invention as claimed obvious for the same reasons as those stated above.

All objections and rejections having been addressed, Applicant submits that the claims are in allowable form and reconsideration of all rejections under §§ 102 and 103 is respectfully requested. Should any matters remain that can be resolved by telephone, the examiner is encouraged to telephone the undersigned at 415-576-0200.

Respectfully submitted,



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APPENDIX A

AMENDED PARAGRAPH IN SPECIFICATION
WITH MARKINGS TO SHOW CHANGES MADE

FIG. 2 is an enlarged view of a section of the adapter plate 17 showing a single connector portion 18. The connector passes through a threaded hole 21 in the plate and is secured in place by a faceted protrusion or nut-like extension 22 which abuts the upper surface 23 of the plate. The female LUER-type connector 24 is supported by a hollow shaft 25 extending upward. Poised above the connector is a plug 26 with a protruding post 27 that fits inside the connector 24 and extends into the hollow shaft. The post 27 is solid and thereby blocks flow through the connector and holds a vacuum in the underlying vacuum chamber when the connector is not in use. The interior of the plug (not visible in the Figure) has the same connecting features as the male LUER-type connector that is included at the tip of a column or syringe. The outer surface 28 of the plug may be ridged or knurled to facilitate gripping and twisting by the user's thumb and forefinger.

APPENDIX B

AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

- 1 1. (amended) A vacuum manifold for interchangeably accommodating a
2 multi-well plate and one or a plurality of individual chromatography columns each
3 terminating in a male portion [portions] of a male-female-type air-tight manually
4 engageable connector [connectors], said vacuum manifold comprising:
5 a plate perforated with a plurality of through-passages, each through-
6 passage having embedded therein a female portion of said male-female-type
7 airtight [air-tight] manually operable [engageable] connector;
8 a plurality of individually removable plugs, each said plug shaped to mate
9 with one of said female portions to form a substantially airtight closure of said
10 through-passage; and
11 a receptacle with an open top and a port for drawing a partial vacuum in
12 said receptacle, said receptacle containing an internal shoulder encircling said
13 open top and sized to receive said plate [means for supporting said plate across
14 said open top].



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1 3. (amended) An adapter for a vacuum manifold, which manifold is
2 designed to produce vacuum-induced flow through all wells of a multi-well laboratory
3 plate, said adapter rendering said vacuum manifold usable for producing vacuum-induced
4 flow through one or a plurality of individual chromatography columns each terminating
5 in a male portion [portions] of a male-female-type air-tight manually engageable
6 connector [connectors], said adapter comprising:
7 a plate whose lateral dimensions are substantially the same as those of said
8 multi-well laboratory plate, said plate having a plurality of through-passages, each
9 through-passage having embedded therein a female portion of said male-female-
10 type airtight [air-tight] manually operable connector; and
11 a plurality of individually removable plugs, each said plug shaped to mate
12 with one of said female portions embedded in said plate to form a substantially
13 airtight [air-tight] closure of said through-passage.

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